REMARKS

Status of the claims

Claims 1, 39-41, and 45-55 were pending in the present application. By virtue of this response, claims 1, 39-41, and 45-55 have been amended. Accordingly, claims 1, 39-41, and 45-55 are currently under consideration.

Support for the claim amendments and new claims may be found in the specification, for example, in Tables 2 and 3.

With respect to any claim amendments or cancellations, Applicants have not dedicated to the public or abandoned any unclaimed subject matter and moreover have not acquiesced to any rejections and/or objections made by the Patent Office. Applicants expressly reserve the right to pursue prosecution of any presently excluded subject matter or claim embodiments in one or more future continuation and/or divisional application(s).

Information Disclosure Statement

Applicants thank the Examiner for drawing their attention to the typographical error on the Form PTO-1449 submitted with the Supplemental Information Disclosure Statement filed on August 23, 2007. U.S. Patent No. 6,993,140 should have been listed as U.S. Patent No. 6,9**3**3,140. A further Supplemental Information Disclosure Statement is submitted herewith, with this reference correctly listed. Applicants would appreciate the Examiner initialing and returning the Form PTO-1449, indicating that this reference has been considered and made of record in this application.

Sequence Listing

A new Sequence Listing is submitted herewith. The Sequence Listing has been amended to include SEQ ID NO:3, which is identical to SEQ ID NO:2, the amino acid sequence of the *Pseudomona mendocina* cutinase enzyme, but without the 14 amino acid leader sequence. The amino acid numbering in SEQ ID NO:3 corresponds to the numbering in Tables 2 and 3 of the

specification.

Rejections under 35 U.S.C. §112, second paragraph

Claims 1, 39-41, and 45-55 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. In the Office Action, the Examiner suggests amending the phrase "said variant consists of substitution of Met . . . of SEQ ID NO:2" (using claim 1 as an example) to "said variant consists of the amino acid sequence of SEQ ID NO:2, except for substitution of Met at position 192, Val at position 194, and Gly at position 219." Although Applicants respectfully maintain that the claims were clear as written, the claims have been amended to recite the Examiner's suggested phrasing, solely to expedite prosecution.

The claims have been further amended to recite SEQ ID NO:3 rather than SEQ ID NO:2. As discussed above, SEQ ID NO:3 is identical to SEQ ID NO:2 minus the 14 amino acid leader sequence. Consequently, the claims have also been amended to recite amino acid positions that correspond to the numbering in SEQ ID NO:3 and Tables 2 and 3 of the specification.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §112, second paragraph.

Rejections under 35 U.S.C. §112, first paragraph

Claims 30-31, 35, 37, and 40 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description and enablement requirements. In the Office Action, the Examiner suggests amending the phrase "said variant consists of substitution of Met . . . of SEQ ID NO:2" (using claim 1 as an example) to "said variant consists of the amino acid sequence of SEQ ID NO:2, except for substitution of Met at position 192, Val at position 194, and Gly at position 219." Although Applicants respectfully maintain that the claims were supported by adequate written description and enablement as written, the claims have been amended to recite the Examiner's suggested phrasing, solely to expedite prosecution.

The Examiner also states that the variants disclosed in the specification appear to be variants of SEQ ID NO:2 minus a 14 amino acid leader sequence (*i.e.*, the mature form, not variants of SEQ ID NO:2 itself). The claims as amended herein recite variants of SEQ ID NO:3, which is the amino acid sequence of the mature form of *P. mendocina* cutinase, without the 14 amino acid leader sequence.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §112, first paragraph.

Rejections under 35 U.S.C. §103(a)

Claims 39-55 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Poulouse et al., U.S. Patent No. 5,352,594 ("Poulouse"). Applicants respectfully traverse this rejection.

As discussed in previous responses, Poulouse neither teaches nor suggests the specific variants recited in the present claims. As acknowledged by the Examiner, the claimed limitations of increased polyesterase activity and/or enhanced thermostability are also not taught or suggested in the cited reference. However, the Examiner contends that such properties are inherent in variants that could be produced according to the suggestion in the reference to make substitutions at amino acid positions within 4 amino acids (in the claims) or 6 amino acids (in the disclosure) of catalytic amino acids.

Applicants respectfully maintain that variants with particular functional properties that <u>could</u> be produced according to a suggestion in a cited reference are not inherently taught in the reference. As noted in MPEP §2112 IV, "[t]he fact that a certain result or characteristic <u>may</u> occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." This section of the MPEP further notes that "'[i]nherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" (citing *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)) In the instant case, the claimed variants could be produced by experimentally making substitutions at suggested amino acid positions within a

certain linear distance from catalytically active amino acids. The fact that variants with the claimed functional features could result from such testing does not satisfy the standard for inherent disclosure.

MPEP §2112 IV further states that "'[a]n invitation to investigate is not an inherent disclosure' where a prior art reference 'discloses no more than a broad genus of potential applications of its discoveries'" and "'[a] prior art reference that discloses a genus still does not inherently disclose all species within that broad category' but must be examined to see if a disclosure of the claimed species has been made or whether the prior art reference merely invites further experimentation to find the species." (citing *Metabolite Labs, Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1367,71 USPQ2d 1081, 1091 (Fed. Cir. 2004)) In the instant case, the disclosure in the cited reference suggests that replacement of an amino acid within about 6 amino acids would be within a 15 angstrom distance of a catalytic amino acid, resulting an increase or decrease in perhydrolysis/hydrolysis ratio and K_{cat}, K_m and K_{cat}/K_m (col. 5, lines 42-45). This is an invitation to perform further experimentation to find species with these particular kinetic properties, which are than the functional properties that are currently claimed. Disclosure of this very broad genus of possible variants is not a disclosure of the claimed species and does not inherently disclose all species within the genus. The claimed species are not inherent in the teachings of the cited reference and are not rendered obvious by this reference.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a).

Claim 1 is rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Poulouse, in view of Schumann et al. (1993) *Protein Sci* 2:1612-1620 ("Schumann"), LoGrasso (1991) *Biochemistry* 30:8463-8470 ("LoGrasso"), and Cunningham et al. (1987) *Protein Engineer* 1:319-325 ("Cunningham"). Applicants respectfully traverse this rejection.

As discussed above, Poulouse does not teach or suggest the specific claimed variants, either expressly or inherently. Schumann, LoGrasso, and Cunningham do not cure these deficiencies. The Examiner admits that "Poulouse does not make a triple mutant of *P.*

mendocina cutinase as encompassed by the claims." The Examiner states that "[a]t the time of the invention, it was well-known in the art that multiple mutations can achieve enhancements over single or double mutations." However, Applicants respectfully note that none of the cited references, either singly or in combination, teach or suggest the claimed multiple mutations. Further, none of the cited references teaches or suggests the claimed functional property of increased polyesterase activity. Since the cited references do not teach or suggest all of the limitations of the claim, they do not satisfy a *prima facie* case for obviousness.

The Examiner states that "[o]ne would have been motivated to make all triple mutants within 4 amino acids of the catalytic triad of *P. mendocina* lipase because of the specific guidance of Poulouse to make multiple substitutions within the four amino acids of the catalytic triad in order 'to optimize the results' . . . because it was recognized in the prior art that multiple substitutions could achieve enhanced results that are greater than either single or double mutants as shown by Schumann, LoGrasso, and Cunningham." Applicants respectfully maintain that the "specific guidance" provided by Poulouse relates to optimization of results in different functional parameters than those that are currently claimed. Poulouse was concerned with modification of perhydrolysis/hydrolysis ratio and K_{cat}, K_m and K_{cat}/K_m. Neither Poulouse nor the cited secondary references provide "specific guidance" that would suggest even testing for the claimed functional feature of increased polyesterase activity. Thus, these references do not render the claimed invention obvious.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a).

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 07-1048, referencing Docket No. GC724. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

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